

Project Management Planning

Introduction

Planning is the Seed for Success

Without a project plan, project success will be difficult. Team members would have limited understanding of expectations, activities may not be properly defined, and resource requirements may not be understood.

This section provides an overview of planning and focuses on the project plan elements.

Responsibilities

The responsibilities for project planning are summarized below:

- Project Managers are responsible for developing the project plan for a specific project. It is an activity, which requires training, focus and appropriate management and communication skills.
- State organizations and Project Managers are responsible for reviewing the guidelines developed by the Missouri Adaptive Enterprise Architecture (MAEA) committee's before new technology projects are developed and enforced within an organization.
- State organizations are responsible for developing internal procedures to ensure that the planning process is completed consistently with the state organization's business plan. IT projects must be well thought out, support the key stakeholder goals, and include processes that allow the project to be tracked and controlled until completion.
- State organizations are also responsible for assigning the Project Manager and ensuring that there are adequate resources assigned to managing a project. Direct project management costs should not be rolled into overhead costs. Management is a full time job for most projects.

Terminology

As with all the sections of this methodology, a full glossary of terms is provided in Appendix A: Glossary; however, a sub-set of terms relative to this section includes:

Activity is a task or series of tasks performed over a defined period of time.

Budget refers to an estimate of funds and/or resources planned to cover a program or project.

Configuration Management are processes including procedures and tools to control project deliverable(s) in terms of release and revision. A system of procedures that monitors emerging project scope against the scope baseline. Requires documentation and management approval on any change to the baseline.

Project Plan is a management summary document that gives the essentials of a specific project in terms of its objectives, justification, and how the objectives are to be achieved. It describes how major activities of the project management function are to be accomplished, and describes methods of overall project control. The project plan evolves through successive stages of the planning process.

Quality is a composite of attributes (including performance features and characteristics) of the product and process required to satisfy the need for which the project is undertaken.

Project Management Planning

Introduction

Resource is something that lies ready for use or that can be drawn upon for aid or to take care of a need.

Resource Planning is the identification of resource components required to complete the project.

Requirements is a description of product functions that collectively will satisfy the overall business goal.

Risk is any factor that potentially can jeopardize the successful completion of a project.

Risk Management is the art and science of identifying, analyzing, and responding to risk factors throughout the life of a project.

Stakeholders are individuals or organizational entities whose stake in the project is sufficient for them to play a role in affecting the outcome of the project.

Work Breakdown Structure is a division of tasks that define, organize, and display the work to be accomplished to achieve the specified product or services.

Project Management Planning

Planning Process & Project Plan

What is Project Planning?

Project planning defines the project activities and describes how the activities will be accomplished. The purpose of project planning is to define each task, estimate the time and resources required, and provide a framework for management review and control. The project planning activities and goals include defining:

- The specific work to be performed
- Estimates to be documented for tracking, and controlling the project
- Commitments that are planned, and agreed to by stakeholders
- Project assumptions and constraints
- The size of the project in terms of dollars and resources
- Project schedule
- Project risks

Repetition of these major activities is necessary to establish the project plan. Typically, several iterations of the planning process are required.

The Planning Process

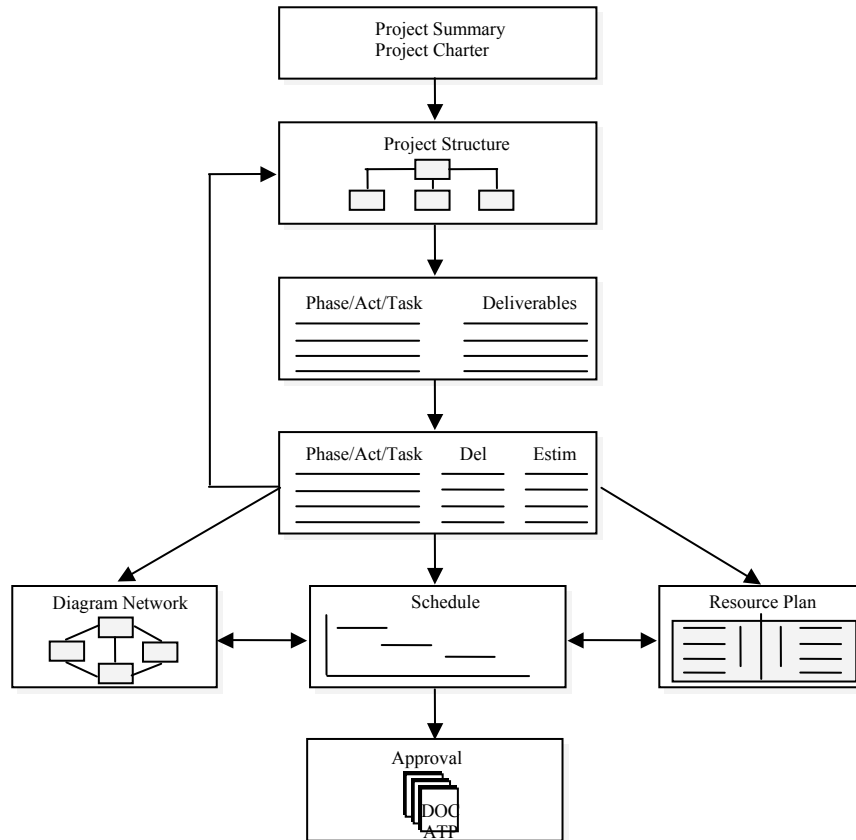
The planning processes discussed in this document are conducted to ensure successful completion of project deliverables. The planning process includes a group of techniques that provides the detailed list of activities that are to be completed, and how the work will get done, by whom, when, and for how much. In summary, the project plan provides the specifics of:

- WHAT (Objective, scope, and statement of work)
- HOW (Approach, work breakdown structures)
- WHO (Project organization and resource schedule)
- WHEN (Schedule and milestones)
- WHERE (Facilities required)
- WHAT-IF (Contingency Plans is the event of Risk Events)

Project Management Planning

Planning Process & Project Plan

Overview of Planning Process



Importance of the Project Plan

A project plan is a formal, written document that is used to prepare for, manage and control a project.

The project plan forms the basis for all management efforts associated with a project. It is a document that is also expected to change over time. The information associated with the plan evolves as the project moves through its various stages and is to be updated as new information unfolds about the project in the Execution Phase.

Project Management Planning

Planning Process & Project Plan

Steps in the Planning Process

The planning process consists of the following basic tasks:

- Define the problem, the goal(s), the objectives and the success factors for this specific project
- Develop the Project Schedule
 - Define the tasks to be performed
 - Establish the general sequence and create the WBS
 - Define the organization used to execute project
 - Estimate task duration
 - Estimate resources for each task
 - Identify all deliverables associated with project
 - Identify precise and measurable milestones
 - Document task relationships
 - Define critical path
 - Establish start and end dates for each task
 - Define and create the schedule
- Define a budget for performing the tasks.
- Identify the known risks and suggested approaches to prevent or mitigate.
- Define the process used for ensuring quality.
- Define the process used for configuration management and project requirements.

Overview of Project Scheduling

Following the definition of project activities, the activities are associated with time to create a project schedule. The project schedule provides a graphical representation of predicted tasks, milestones, dependencies, resource requirements, task duration, and deadlines. The project's schedule interrelates all tasks on a common time scale. The project schedule should be detailed enough to show each WBS task to be performed, the title of the persons responsible for completing the task, the start and end date of each task, and the expected duration of the task.

Like the development of each of the project plan components, developing a schedule is an iterative process. Milestones may suggest additional tasks, tasks may require additional resources, and task completion may be measured by additional milestones. For large, complex projects, detailed sub-schedules may be required to show an adequate level of detail.

Project Management Planning

Planning Process & Project Plan

During the life of the project, actual progress is frequently compared with the original schedule. This allows for evaluation of development activities. The accuracy of the planning process can also be assessed. This assessment can be used to improve the planning process.

Project Management Planning

Activity Definition and Sequencing

Develop Project Tasks

One of the most important parts of the project planning process is the definition of project activities. Activity sequencing involves dividing the project into smaller, more manageable components or tasks and then specifying the order of completion. The list of activities is called a Work Breakdown Structure (WBS). The goal is to integrate the WBS, the schedule, and the budget into a written plan.

The WBS reflects all activities such as project management, requirements definition, design, implementation, transition management, testing, training or installation. The project manager is responsible for defining all level tasks associated with a project and then further decomposing them as planning continues.

An activities list is typically shown in one of two ways. It can be shown as an outline or it can be graphically presented. Two samples of WBS are shown below. These samples are not complete, but are provided for examples of format only.

1.0 MANAGEMENT

1.1 Finalize Project Plan

- 1.1.1 Review Project Plan with Project Team
- 1.1.2 Update Project Plan to create baseline

1.2 Track Project

- 1.2.1 Prepare status reports
- 1.2.2 Collect/analyze project metrics

1.3 Perform Quality Activities

- 1.3.1 Finalize QA Plan
- 1.3.2 Conduct Reviews
- 1.3.3 Conduct Audits
- 1.3.4 Review and Act on Recommendations

1.4 Perform Configuration Management

- 1.4.1 Finalize CM Plan
- 1.4.2 Develop Project Library
- 1.4.3 Manage Change Board
- 1.4.4 Maintain Configuration Items

1.5 Report Status

- 1.5.1 Schedule and conduct Status Meetings
- 1.5.2 Meet with Executive Management
- 1.5.3 Prepare Staff evaluations

1.6 Conduct Close-Out Activities

- 1.6.1 Finalize User Sign-off
- 1.6.2 Conduct Lessons Learned
- 1.6.3 Document PIER
- 1.6.4 Archive Records
- 1.6.5 Celebrate Success

2.0 DESIGN

2.1 Prepare Preliminary Design

- 2.1.1 Develop Enterprise Architecture
- 2.1.2 Prepare Data Flow Diagrams

Project Management Planning

Activity Definition and Sequencing

- 2.1.3 Prepare Logical Data Model
- 2.2 Develop Design Specifications**
 - 2.2.1 Prepare Physical Data Model
 - 2.2.2 Prepare Data Dictionary
- 2.3 Document Design Specifications**
- 2.4 Review Design**

3.0 DEVELOPMENT/INTEGRATION

- 3.1 Procure Software Packages**
 - 3.1.1 Procure Database
 - 3.1.2 Procure User Interface Building Tool
 - 3.3.3 Procure Operating System
- 3.2 Develop Software**
 - 3.2.1 Develop Server Application
 - 3.2.2 Develop User Interface
 - 3.2.3 Develop XYZ Interface
- 3.3 Procure Hardware**
 - 3.3.1 Procure Server
 - 3.3.2 Procure Workstations
- 3.4 Perform Integration Testing**
- 3.5 Convert Data**
 - 3.5.1 Develop Conversion Plan
 - 3.5.2 Convert Data
- 3.6 Develop User Manuals**
- 3.7 Transition Management**

4.0 ACCEPTANCE TESTING

- 4.1 Plan Acceptance Test**
- 4.2 Conduct Acceptance Test**
- 4.3 Develop Test Report**

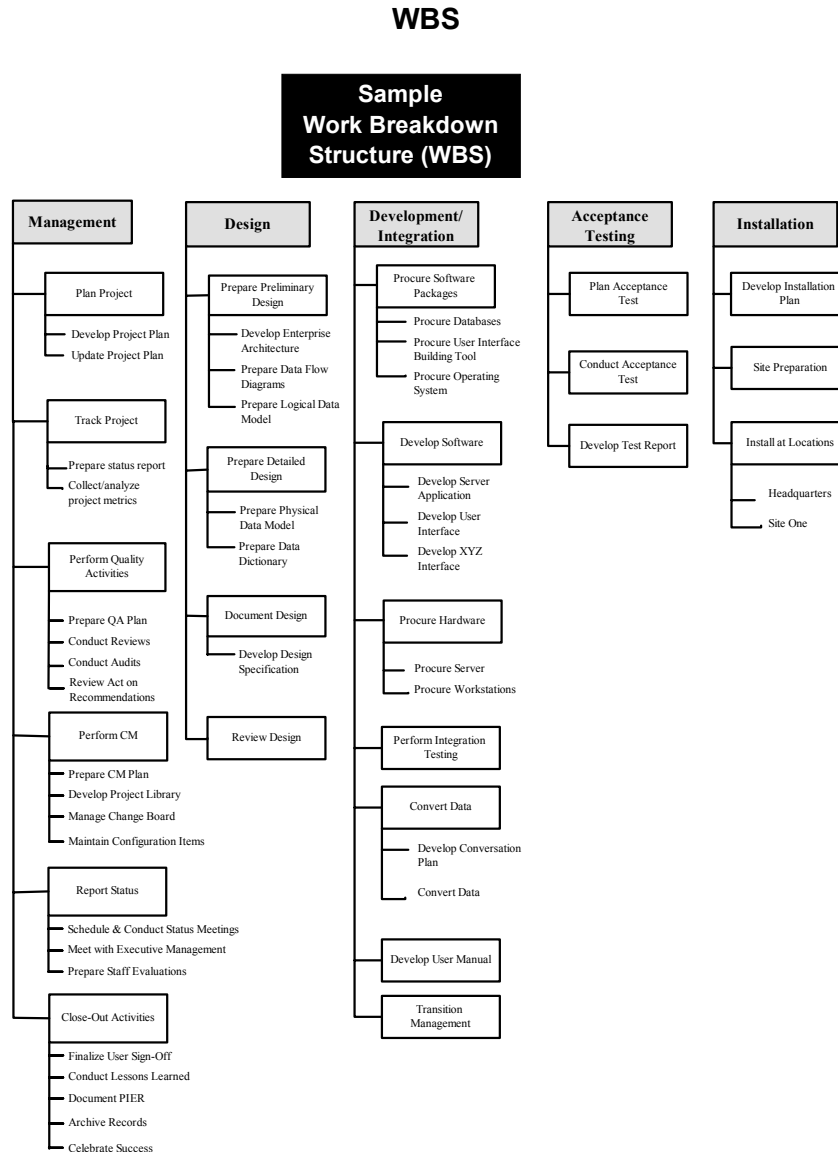
5.0 INSTALLATION

- 5.1 Develop Installation Plan**
- 5.2 Site Preparation**
- 5.3 Install at Locations**
 - 5.3.1 Headquarters
 - 5.3.2 Site 1

Project Management Planning

Activity Definition and Sequencing

Sometimes, instead of depicting the WBS as an outline, it is shown graphically, as below:



WBS tasks are developed by asking, “What tasks need to be done to accomplish the project objectives?”

As levels of the WBS become lower, the scope, complexity, and cost of each subtask become smaller. The lowest level tasks, or work packages, are independent, manageable units that are planned, budgeted, scheduled, and controlled on their own.

As efforts of similar scope and type are planned, the basic WBS tasks remain somewhat similar, but each project requires a specific set of tasks that address the uniqueness of the project's requirements. Certain

Project Management Planning

Activity Definition and Sequencing

top level elements, such as project management, are included in the WBS of every project, regardless of its type, size, or complexity. Other items, like installation, may not apply to every project.

There is no simple formula to define how detailed a work breakdown needs to look. There are, however, some helpful guidelines for completion:

- Break down the work until accurate estimates of cost and resources needed to perform the task are provided.
- Ensure that clearly defined starting and ending events are defined for the task. This may correspond to the production of a deliverable or the occurrence of an event.
- Verify that the lowest level tasks can be performed within a “reasonable” period of time. If the time period to complete a task is too long, an accurate project status in the implementation phase may not be possible. An industry standard rule of thumb is to make work packages that can be completed in timeframes of two elapsed weeks.
- Verify that people who work on the project are all assigned a WBS task. Have a firm rule: if the task is not on the WBS, it is not worked on.

The WBS evolves over the course of planning. It is highly probable that it will evolve as the scheduling, estimation, and resource allocation portions of the plan are completed.

The WBS has multiple uses. It is both a task list for planning and a structure for providing report status during the implementation phase. As individual low level tasks are completed, the project progress is assessed. It also serves as a useful management communication tool by which results can be compared with expectations.

One of the difficult parts of talking about projects generically, is the wide range of such projects. Typically, in a small project, there is a single project development phase. In large or complex systems, however, there are often multiple phases, which are then grouped into projects, and these can be grouped into a program.

Sometimes these phases or projects are driven by the need to achieve certain levels of functionality prior to the availability of the complete solution. Other times, the projects are defined to partition the development effort and to reduce the risks associated with larger project efforts.

For large systems, the decomposition of the system into smaller components needs to be done early in the initiating process. The rationale for the decomposition must be known; otherwise, different results derived from different reasons for the system decomposition may occur. For example, if a project is defined simply to accommodate user needs, the project may cross multiple functional areas of a system. If, on the other hand, a system is divided into phases simply to reduce risk, a functional division might occur where the projects represent completion of entire functional areas of the system. The way in which the projects are handled differs widely.

Project Management Planning

Activity Definition and Sequencing

Define Task Relationships

If a project is broken down into phases, be sure that the WBS reflects this.

Then, break the WBS down by deliverable. The WBS denotes a hierarchy of task relationships. Subtask completion eventually rolls up into task completion, which ultimately results in deliverable completion, phase completion and project completion. If the tasks are not organized efficiently, it becomes difficult to schedule and allocate resources to the tasks.

Defining Deliverables

Deliverables associated with the project are shown in the WBS and are reflected in the Work Product Identification (WPI) portion of the Project Plan. A sample of a WPI template is shown below. All deliverables are listed in the order of planned development. As the schedule is created, the due date is filled in. The responsibility for the deliverable is assigned as it is known (typically when the organization chart is defined). The date delivered is a field that is filled in as deliveries are made.

Over the course of the project, a comparison of the due date and the date delivered provides one metric for how well deliverable dates are met by the project team.

Work Product Identification

Product Name	Due Date	Date Delivered	Author/ POC
Requirement Specification	4/1/96		G. Brown
Design Specification	8/1/96		G. Brown
Test Plan	8/1/96		A. Jones
Implementation Plan	11/1/96		B. White
Source Code	12/1/96		L. Brass
Test Report	1/30/97		A. Jones

While the deliverables list is a compilation of information identified in the WBS and the project schedule, it is useful to maintain a separate list since delivering deliverables on schedule is so important. Separate tracking of deliverables can help keep a project on track. It also serves as a useful communication tool for defining the status of the project.

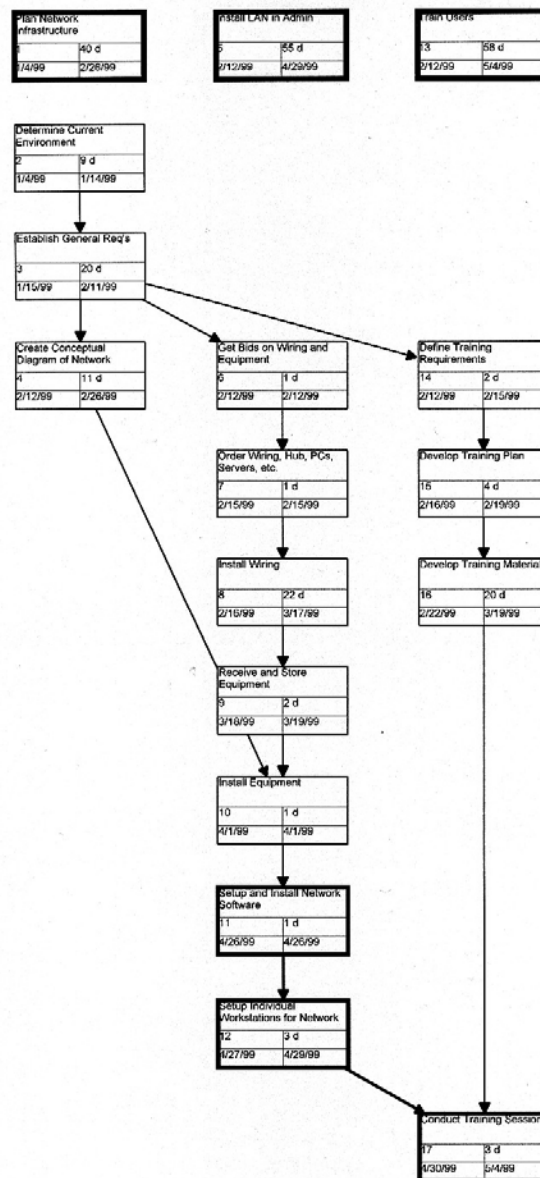
Project Management Planning

Activity Definition and Sequencing

Development of a Project Schedule

The following PERT chart is designed to clearly show the relationships between the tasks. It is an extremely valuable planning tool if the sequence of events is quite complex. However, using the PERT chart makes it difficult to show progress and to communicate with the Steering Committee at a high level. The chart should be used only when the audience needs a detailed understanding of the task relationships.

Sample PERT Chart

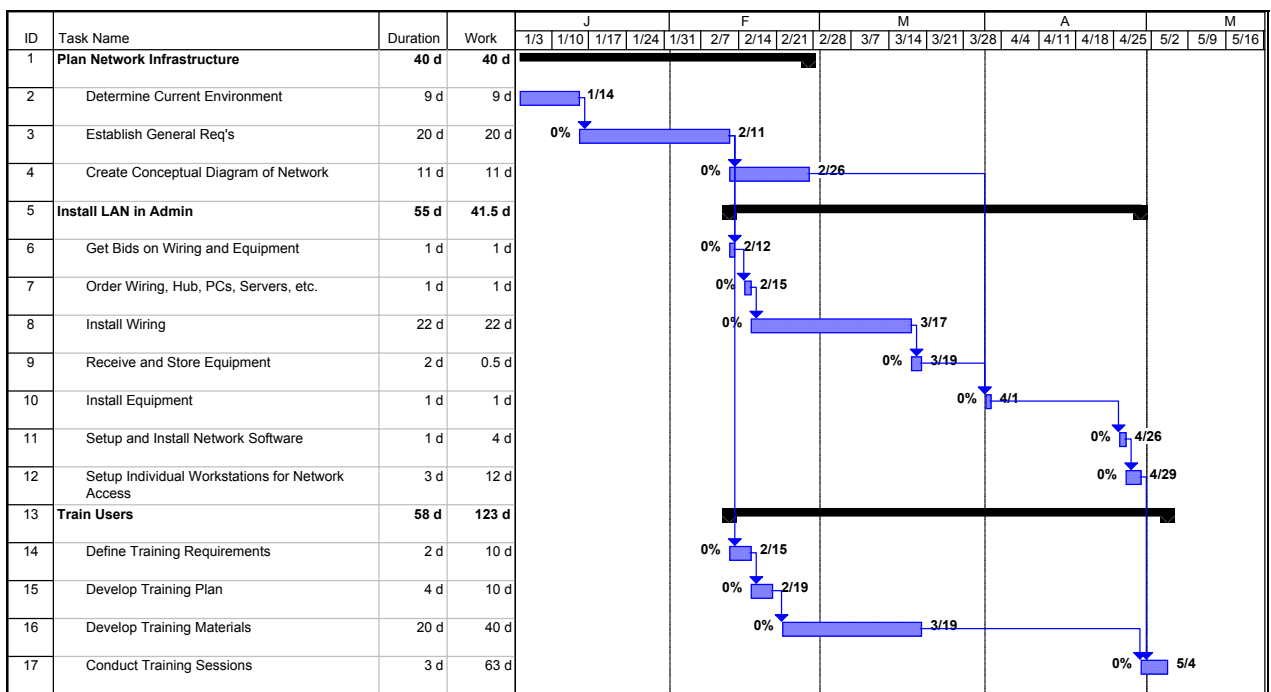


Project Management Planning

Activity Definition and Sequencing

Typically, a GANTT chart (or bar graph) is adequate. These schedules are two-dimensional representations that show the tasks and the timeframe for completion. Since task interrelationships are not easily shown on a GANTT chart, it is considered a weak planning tool for very complex information technology projects. However, the GANTT chart is very common for reporting status and for defining the schedule. A sample GANTT follows.

Sample GANTT Chart



Define Precise and Measurable Milestones

Key events are often denoted by milestones. These events typically have no duration. For example, deliverables often are represented as milestones, while the effort to produce the deliverable is referred to as a task.

While milestones are unique to each project, some example project milestones are shown below:

- Requirements Approval
- Phase Review Approval
- Prototype Approval
- Design Reviews Complete
- Code Reviews Complete
- Unit Test Complete

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Activity Definition and Sequencing

- Integration Test Complete
- Acceptance Test Complete
- System Acceptance by User
- Order Hardware
- Hardware Shipment
- Hardware Arrives
- Documentation Delivery

Milestones can occur at the end of almost any work package in the WBS. Major project milestones should and included in the project plan and schedule.

For contracted work, milestones are often used as a point in the project where interim payments might be made. If this approach is used, mutual agreement is necessary on the content of each milestone and the cost associated with that milestone.

Steps to Creating a Project Schedule

Activity sequencing involves dividing the project into smaller, more manageable components (activities) and then specifying the order of completion. The Activity List form is a valuable tool for initially creating the WBS, and then by completing the remaining columns, a Project Schedule can be completed.

Activity List (Sample) Work Breakdown Structure

Provide an activity list (*work breakdown structure*) that describes each task required by the project

Activity #	Activity Name Description	Roles	Elapsed Days	Work Hours	Start Date	Dependency	Milestone	X-Ref
1	Design System Architecture		10	80	9/1/XX		Detailed Design	
2	Develop System Development		20	160	10/1/XX	1FS	Software Code	
2.1	Code Sub-routine		10	80				
2.2	Integrate Sub-routine		10	80				
3	Testing System		10	80	11/6/XX		Completed Accept. Test of Doc.	
4	Installation State Rollout		35	320	12/15/XX			
4.1	Pilot Installation		10	120	12/15/XX			
4.2	Statewide Installation		20	200	1/15/XX	4.1 FS + 5 day lag	Installation Certificate	
5	Provide User Support		30	300	12/30/XX	4. FS		
6	Provide User Training		10	80	12/15/XX	4.1 SS	Training Certificate	
7	Transfer System to Operations		1	16	1/30/XX	4.2 FS + 5 day lag		

Legend

FS = The specific task must finish prior to starting the identified task.

SS = Two identified task start at the same time, but are not linked to finish at the same time.

FF = Two identified task finish at the same time, but are not linked to start at the same time.

Blank = Task has no dependency

Lag = Additional days can be added for reserve to ensure project stays on schedule.

X-ref = To your Assumptions

- Activity # = the reference number of the activity, task and subtask
- Activity Name Description = A short description of the activity or task
- Roles = Roles or positions assigned to the task

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Activity Definition and Sequencing

- Elapsed Days = Calendar working days of the task from beginning to end; duration
- Work Hours = Person hours associated with the tasks; used to calculate task cost
- Start Date = Planned start date of the task
- Dependency = The type of relationship this task has with other tasks in the project
- Milestone = A key event in the project related to the completion of this specific task
- Xref = A place to reference to an assumption that further explains this task, its hour, duration, etc.

Estimate Task Duration

Estimating task duration is one of the most challenging aspects of project planning. It is also a key to later cost estimation. This is a process that occurs throughout the planning process.

With defined task durations, the team knows what to expect and what is expected of them. Task duration is frequently underestimated. Inaccurate estimates can result in an increase in the "frenzy level" of a project. The frenzy escalates as sponsors scramble for more money, and/or the technical staff scrambles to complete a project in an unrealistic timeframe. Often, the end result is cutting corners, excessive overtime, and a dissatisfied user.

The estimation process is complex because activity duration is affected by numerous variables that must be dealt with concurrently in the planning phase. Some of these variables include staff availability, the skill level of the person assigned to the task, unexpected events, efficiency of work time, and mistakes and misunderstandings during the development of the project plan.

When estimating the duration of a task, reality is a major factor. The knowledgeable scheduler takes into account absenteeism, meetings, discussions, and interaction among the staff. No one is 100% productive every hour of the workday. If a scheduled task assumes 100% productivity, the schedule rapidly falls apart. A successful schedule builds these types of factors into the duration estimate.

There are several techniques that support task duration estimation. The most common technique is based on the historical experience of a similar scope of work previously performed. Collected and archived historical project data are used successfully by many organizations to achieve quality performance on project deliveries. The database of Post Implementation Evaluation Reports maintained by the agency and OIT should have a wide range of project schedules plans and standards to review in developing your project schedule.

Historical records greatly support both the duration and the cost estimations that are so important in this phase. Data based on current staff skills are far more valuable than generalized "industry" estimates. If historical data does not exist, seek the advice of experts and others who have completed similar tasks.

When historical data or experts are not available, use a technique of getting estimates from multiple sources, comparing results and estimating the duration based on the multiple inputs. The nature of this method is predicated on finding good sources for providing the estimates.

Remember to always base your estimates on some easy-to-understand quantifiable parameters, for example:

- Documents to be prepared: number of pages assumed in the document times minutes per page
- Proposals: number of proposals to be evaluated times average number of pages times person hours per page

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Activity Definition and Sequencing

- Requirements: number of functional specifications, or number of technical specifications times person hours per requirement to generate and review
- Tests: number of user tests, string tests, stress tests, times person hours per test
- Training: number of people to be trained times hours of training plus preparation and coordination
- Meetings: number of meetings times people involved times length of meetings. Be sure and include travel time and preparation time.
- Configuration Management: estimated hours per week to include all time for change control board, documenting changes, issues and versions, completing analysis, and updating all associated files. Can range from .5 to 5% of total budget.
- Quality Assurance: number of reviews times person hours of review time. Include all involved personnel in your estimates.

Estimating using these techniques will improve the accuracy of the estimates and improve the communications between the planning team, the Steering Committee and the stakeholders.

Define Priorities

Clearly defining the task priorities helps to resolve any scheduling and/or resource conflicts. Understanding the priorities and relationships of the tasks assists in resolving difficult scheduling conflicts.

Define the Critical Path

The critical path is the longest path through a project. It determines the earliest possible completion of the work. The critical path is carefully managed because if critical path tasks slip, the entire project is delayed. In order to manage the project, the project manager determines the critical path and remains aware of its importance throughout the implementation of the plan.

The successful scheduler considers availability of both labor and non-labor resources. Equipment availability on a long lead item often drives the critical path of a schedule. If installation equipment is required, for example, and the equipment cannot be delivered for six months, the installation phase is held up for that period of time.

Document Task Relationship

After the WBS has been created, the tasks of each major section should be ordered into their logical sequence. Then, if tasks are dependent on each other, the task dependencies should be indicated. That is, if one task must be completed before another, then the first is a predecessor to the second, and the second task is a successor to the first. This relationship would be a Finish-to-Start relationship, i.e., the first task must finish before the second task can begin.

Other task relationships include:

- Start-to-Finish: this task must start before the previous one can finish. A lead time can be added to indicate that this task must start x days before the previous task finishes.

Project Management Planning

Activity Definition and Sequencing

- Start-to-Start: this task must start at the same time as the other task plus or minus lead time.
- Finish-to-Finish: this task must finish at the same time as the other task plus or minus lead time.

Document Assumptions

Documentation of the assumptions made in developing the project schedule are critical to the later success of the project. Without clear documentation of these assumptions, later changes to the schedule are very difficult and risky.

If, for example, a schedule was shortened because it was assumed that a highly skilled person would be performing the work, that assumption should be documented. Then, if a less skilled person is actually assigned to perform the task, the project manager can recognize the risk and make necessary changes and decisions. Without documentation of the assumption, the schedule could be later placed at serious risk without the project manager realizing it.

Review the Results

The development of a schedule requires input from more than one person. No one possesses all the knowledge or understanding of all the factors that affect schedules in every aspect of a project. Schedule review also prompts buy-in to the schedule.

Once an initial cut at the schedule is ready, a team should perform a review. Determine if there is a common understanding of what has to be done. Get their independent estimates as to how long it will take to do the job. Where there are significant differences between the current schedule and new estimates, review and revise the schedule estimates.

Project Management Planning

Budgeting

Overview of Project Budgeting

Paralleling the development of the schedule is the development of a detailed project budget. This budget should include all internal and external costs including contractors, hardware, software, travel and other related expenses. The steps associated with budgeting are highly dependent on the estimated length of tasks and the resources assigned to the project.

Budget estimates are refined in the planning process until they are baselined at project start-up. Budgeting serves as a control mechanism where actual costs can be compared to the budgeted costs. The budget is often the most important parameter in the execution of the project. When a schedule begins to slip, cost is proportionally affected. When project costs begin to escalate, revisit the project plan to determine whether scope, budget, or schedule needs adjusting.

Identify Cost Factors

To develop the budget, the applicable cost factors associated with the project tasks are identified. The development of costs for each task should be simple and direct and consist of labor (internal and external), material, and other costs. Cost of performing a task is directly related to the personnel assigned to the task, the duration of the task, the cost of any non-labor items required by the task, and any allocated indirect cost.

Generally budget estimates and associated assumptions are obtained from experts. Experts may be internal or external. This provides the expertise required to make the estimate and provides buy-in and accountability during the actual performance of the task.

Determining work hours is the single most difficult part of deriving a cost estimate. The costs should factor in vacation time, sick leave, breaks, meetings, and other day-to-day activities. Not including these factors jeopardizes both scheduling and cost estimates.

In calculating the cost of labor, be certain to burden the costs appropriately for your organization. Burdened cost typically refers to the overhead and general expenses associated with an employee. These costs are beyond strict salary expenses (e.g., office space, benefits, etc.).

Non-labor charges include such items as material costs, reproduction, travel, and cost of capital (if leasing equipment), computer center charges, and equipment costs.

Project Estimate Summary Worksheet

For large systems, a project management tool is typically preferred for cost estimation. A Project Estimate Summary worksheet is another simple tool for costing and can be useful if completed prior to entering information into a tool.

Costs are assigned to the lowest level WBS work package task. These costs are then combined to determine a sub-task cost. In turn, these are combined to determine the overall task cost, which can be summed to find the total project cost. This is an example of “bottoms-up” estimating, since we are estimating at the bottom and then rolling up the totals.

Project Management Planning

Budgeting

Instructions for the Project Estimate Summary Worksheet

Task Number

The number corresponds to the activity number reflected on the activity list and schedule. The numbering sequence is an outline format. Few projects require lower than three levels of sub-tasking. Each task structure should include deliverables and milestones.

Project Tasks	
1.	Task
1.1	Sub-Task
1.1.1	Work Package or second level of sub-task
1.1.1.1	Third level

Task and Activity Name

The project's task and activity name is a brief description. This task description should remain consistent throughout the project plan.

Project Tasks	
1.	Project Design
1.1	Develop Functional Specifications
1.2	Develop System Architecture
1.3	Develop Preliminary Design Specification

The remainder of the columns pertain to cost and hour details relative to a specific activity. The cost categories include: labor, material, travel and other.

Always start your cost analysis at the lowest level and total the lowest level tasks to the next level. All "x.x.x" would be added together to determine the value of "x.x" and all "x.x" level tasks would be totaled for "x" level. Finally, all "x" level totals would be totaled to get project total.

The project may require more than one line to complete the budget when multiple salary rates are used to determine "labor cost" for an activity. Labor cost is derived by multiplying labor hours by the labor rate. The project manager may either use an aggregate rate or specific multiple rates. For example, committee meetings could have a standard hourly rate which includes the rate for each attendee. The costs for each task should be totaled and put in "Total per Task."

Project Management Planning

Budgeting

At the end of the form is a line for risk totals. Risk allowances are added to the project in terms of Schedule (adding more time) and Cost (adding additional cost to estimates). A project manager can do this in two ways: adding time and/or cost at the activity level; or adding time and/or cost at the end of the project. This information should come from your Risk Analysis Worksheet, which will be discussed in subsequent sections.

The following is a sample of a Section of a Project Estimate Worksheet.

Project Management Planning

Budgeting

Project Estimate Summary Worksheet – Sample

Customer:

MDOT

Prepared by:

H.A.T.

Project:

MGT System

Date: 9-9-1999

WBS	Project Task	Labor Hour	Labor Rate	Labor Cost	Material Cost	Travel Cost	Other Cost	Total per Task
	:							
5.0	Define Requirements	624		24200	300	2500		27000
5.1	Define Functional Requirements	528		20040		2500		22540
5.1.1	Conduct JAD Sessions	320		12000		2000		14000
5.1.1.1	Schedule Sessions	8	30	240				240
5.1.1.2	Prepare for Sessions	24	40	960				960
5.1.1.3	Facilitate Meetings	24	40	960				960
5.1.1.4	Attend and Participate	240	38	9120		2000		11120
5.1.1.5	Document JAD Meetings	24	30	720				720
5.1.2	Prepare JAD Document	208		8040		500		8540
5.1.2.1	Prepare Documents for Review	80	40	3200				3200
5.1.2.2	Schedule Review Meetings and Distribute Document	8	30	240				240
5.1.2.3	Review the Documents	80	38	3040		500		3540
5.1.2.4	Meet to Gain Sign-off	40	39*	1560				1560
5.2	Define Technical Requirements	88		3824				3824
5.2.1	Review Missouri Architecture Guidelines	16	42	672				672
5.2.2	Review Current System Architecture	16	42	672				672
5.2.3	Review Agency IT Plan	16	42	672				672
5.2.4	Document Interface Points	8	42	336				336

Project Management Planning

Budgeting

WBS	Project Task	Labor Hour	Labor Rate	Labor Cost	Material Cost	Travel Cost	Other Cost	Total per Task
5.2.5	Document the Technical Requirements for New Application	16	42	672				672
5.2.6	Review the Technical Requirements	16	50	800				800
5.3	Prepare Consolidated Requirements Documents	8	42	336	300			636
	:							
	:							
Other:								
Sub-Totals:								622,406
Risk (Reserve) From Risk Analysis Worksheet								76,120
TOTAL (scheduled)								698,526
Comments: <i>(List assumptions for costs as appropriate.)</i>								
* Blended Meeting Rate								

Project Management Planning

Budgeting

Document Assumptions

As with developing a project schedule, documenting assumptions made while developing the project budget is critical to the success of the project. Without clear documentation of these assumptions, tracking to the budget is very difficult.

If, for example, a budget assumed that the material would be acquired at one price rate and only substantially higher cost material was available to perform the task, there would be a budget problem. If the assumption is not documented, the project manager may inadvertently increase project cost and may jeopardize chances for the project's success.

Review the Cost Estimates

Development of project budgets typically requires more than one person. Rarely, if ever does a single individual have the knowledge and understanding of all the factors affecting every aspect of a project.

Upon completion of a draft budget, interview the team and other experts and determine if the work descriptions, schedule and associated budgets are complete and reasonable. Get independent estimates. Where there are significant differences, determine the reasons and either redefine the work packages, schedule, and budgets or review and reiterate the estimates. The total labor days per phase should be checked against the rule of thumb that suggests the following distribution of development project effort and cost:

- 40% for planning and design
- 20% for development
- 40% for testing

It is helpful to get buy-in on the budget from the people who will actually perform the work. Participation results in having a stake in the project's success and fosters accountability.

Estimated Cost at Completion Report

A sample of one type of budget report, which would become part of the Project Plan, is the EAC or Estimated Cost at Completion. It reflects the anticipated cost and hours of the planned project.

Estimated Cost at Completion Summary

Analysis in Hours							Analysis in Dollars				
WBS No.	Activity Description	Budget Hours	Actual Hours	Est. to Complete	Est. @ Complete	Variance (+ = More)	Budget \$	Actual \$	Est. to Complete	Est. @ Complete	Variance (+ = More)
1.0	Define Requirements	430	0	430	430	0	17,780	0	17,780	17,780	0
2.0	Prepare RFP	572	0	572	572	0	22,880	0	22,880	22,880	0
3.0	Issue RFP and Evaluate Vendors	433	0	433	433	0	17,320	0	17,320	17,320	0
4.0	Close-Out	72	0	72	72	0	2,880	0	2,880	2,880	0
	TOTAL	1,507			1,507	0	60,860			60,860	0

The Estimated Cost at Completion Summary is also used as a status reporting document to the Steering Committee and will be further discussed in Section 5.

Project Management Planning

Configuration Management

Configuration Management

For our purposes, Configuration Management includes the processes, procedures and tools to control project deliverable(s) in terms of release and revision; to monitor project scope against the baseline; and manage approval on any change to the baseline, e.g. product and project scope. It also includes the following other concepts and definitions:

Control item is a project element that is considered a unit for the purpose of configuration management. This includes such things as software modules, versions of software systems, the project design document, the project plans, and so forth. A control item, sometimes referred to as a control element, is anything under the control of the Configuration Manager.

Change control is the process of controlling, documenting, and storing the changes to control items. This includes proposing the change, evaluating it, approving or rejecting it, scheduling it, and tracking it.

Version control is a process used to control the release and installation of versions. This includes recording and saving each release and documenting the differences between the releases. Version control applies to developed software, off-the-shelf software systems and any document that includes versions.

Issue control or management is a process that provides a mechanism to document, research and resolve issues that arise during project planning and execution.

Action Item control is a process that provides a mechanism to document and track action items that arises during project planning and execution.

Configuration Management Organization

Effective configuration management requires an effective and well-defined configuration management role and process. The configuration role is responsible for:

- Defining who will be responsible for and have authority over configuration management processes.
- Setting standards, procedures, and guidelines for the full project team to follow.
- Defining tools, resources, and facilities to be used for configuration management.


This information is summarized in either a standard configuration management policy manual and/or in the project Configuration Management Plan. The detailed configuration management information is represented as a summary page in the Project Management Plan. The relationship of the Configuration Management Plan in the Project Management Plan and the organization's Project Management Configuration Management Manual is depicted in the figure on the following page.

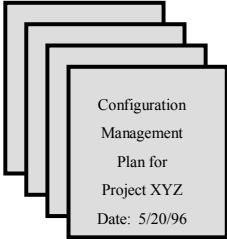
Project Management Planning

Configuration Management

Project Management Configuration Management Summary

Project Management Configuration Management Manual	
Person(s) responsible for Configuration Management: (Should be represented on Organizational Chart)	<input type="text"/>
How will CM be performed throughout the life of the project	<input type="text"/>
What is the repository for control items (both automated and paper)	<input type="text"/>
How will project manager ensure that CM activities are done on a regular basis	<input type="text"/>





Configuration
Management
Plan for
Project XYZ
Date: 5/20/96

Configuration Management Plan

A sample Configuration Management Plan outline is shown below.

Sample Outline for a Configuration Management Plan

1. Configuration Management organization and resources

- 1.1 Organization structure related to CM
- 1.2 Personnel skill level and qualifications for CM
- 1.3 Facilities needed
- 1.4 Equipment and tools used

2. Standards, procedures, policies, and guidelines

- 2.1 Diagram of information flow
- 2.2 Rules for documentation and approval

3. Configuration identification

- 3.1 Method for defining control item
- 3.2 Method for configuration control
- 3.3 List of potential control items

4. Identification methods

(Naming and marking of document, software components, revisions, releases, etc.)

Project Management Planning

Configuration Management

5. Submission and retrieval of control items

6. Version control

- 6.1 Preparation of software and documentation versions
- 6.2 Release approval procedure

7. Storage handling and delivery of project media
--

Storage requirements (both automated and paper)

8. Relationship to contractor configuration management (include their plan and procedures if separate from state's processes)
--

9. Other information

Tasks During the Planning Phase

During the planning process, the project manager defines the group or persons responsible for project configuration management and defines the procedure and required resources for performing configuration management. During the planning phase, the project team also identifies the control items. The goal is to:

- Explicitly assign configuration management's authority and responsibility for the project.
- Ensure that configuration management is implemented throughout the project's life cycle by setting standards, procedures, and guidelines that are produced and distributed to the full project team.
- Ensure that project management has a repository for storing configuration items and associated configuration management records.
- Ensure that QA reviews the configuration management activities on a regular basis.

Relationship to Quality Management

Many of the issues related to configuration management are similar to the issues related to developing a project's quality system. In fact, in software development projects, many of the tasks for quality and configuration management overlap. For this reason, a clear definition needs to be established, even at the planning stage, as to who will play what role.

Project Management Planning

Configuration Management

Authority and Responsibility

Every project includes some activity that requires configuration management. The responsibility for configuration management is assigned in the project plan.

The configuration management authority and responsibility can be handled in the following ways:

1. The state organization maintains a standard, enterprise-wide approach to configuration management and has an identified group responsible for these tasks on all projects undertaken; or
2. The project develops a sub-team within the project management structure to perform the configuration management. This team may be assigned to the project on a full-time or part-time basis depending on the size of the project.
3. Contracted services

In all cases, both the authority and the responsibility for all roles and activities must be clearly defined.

Control Items

During the early stages of project planning, the person responsible for configuration management and the project manager defines the elements placed under configuration control. The list of control items is not standard. The best place to start is with the Activity List or Work Breakdown Structure. Typically, all major deliverables are controlled.

Some of the more specific considerations include:

- Hardware configuration, system architecture, and communication diagrams.
- Software, code, design documents, testing plan, and software review data.
- The Project Management Plan (schedules, budgets, contracts), support function plans, and correspondence and other documents necessary to recreate a project.
- Requirements document, RFP, documentation, training materials.

Configuration Management Procedures

Procedures and tools are necessary to ensure successful implementation of a configuration management process.

The plan also contains information on how the detailed procedures will be developed and specifies that these procedures are in place by project start-up. Some key processes to be addressed in the procedures include:

- How do developers and project team members request and retrieve configuration control items?
- What are the numbering, sequencing, and data processes to be used?

Project Management Planning

Configuration Management

- Does the project contain sensitive or security-driven data; if so, will the configuration management meet the control requirements for this data?
- Where is the location of controlled items, and how does the project team get access to them?
- What items will be placed under automated control and what items will be manually controlled?
- Will there be a change control board for this project, and how will they interface with the other configuration management procedures?
- What is the relationship to the quality assurance and quality control teams?

The plan may also include diagrams and flow charts to describe procedures for submitting change requests and for reporting problems.

Storage of Control Items

Ensure that the Project has a repository for storing Configuration Items and associated Configuration Management Records.

The configuration management environment includes the resources necessary for the implementation of the configuration plan. This includes:

- Configuration control tools:
 - ⇒ Automatic version control and change control tools.
 - ⇒ Monitoring, reviewing, and registration of support utilities.
- Storage facilities -- a safe repository for all approved configuration items, including:
 - ⇒ On-site automated storage for the day-to-day development process.
 - ⇒ On-site paper storage for the day-to-day project for configuration control items that are not stored in automated form.
 - ⇒ Off-site storage for disaster recovery.

Configuration Management is one area in which many automated tools exist. Automated configuration control is best when used in a multi-user development environment, such as a LAN, to facilitate the sharing of project information and data and to allow for consistent application of the configuration management procedures. Controlled elements can be stored in a central database, and developer access is managed from a central configuration control system. Without such a system, added manual controls and additional tasks for the developers may need to be imposed. Multi-location development is another environment that could be more easily handled with automated tools.

Configuration Management Goes Beyond Development

Configuration management is a process that continues beyond the project development cycle and into the maintenance and operation phases. A project that has clearly implemented a successful configuration management process adds to the value of the system once it reaches maintenance.

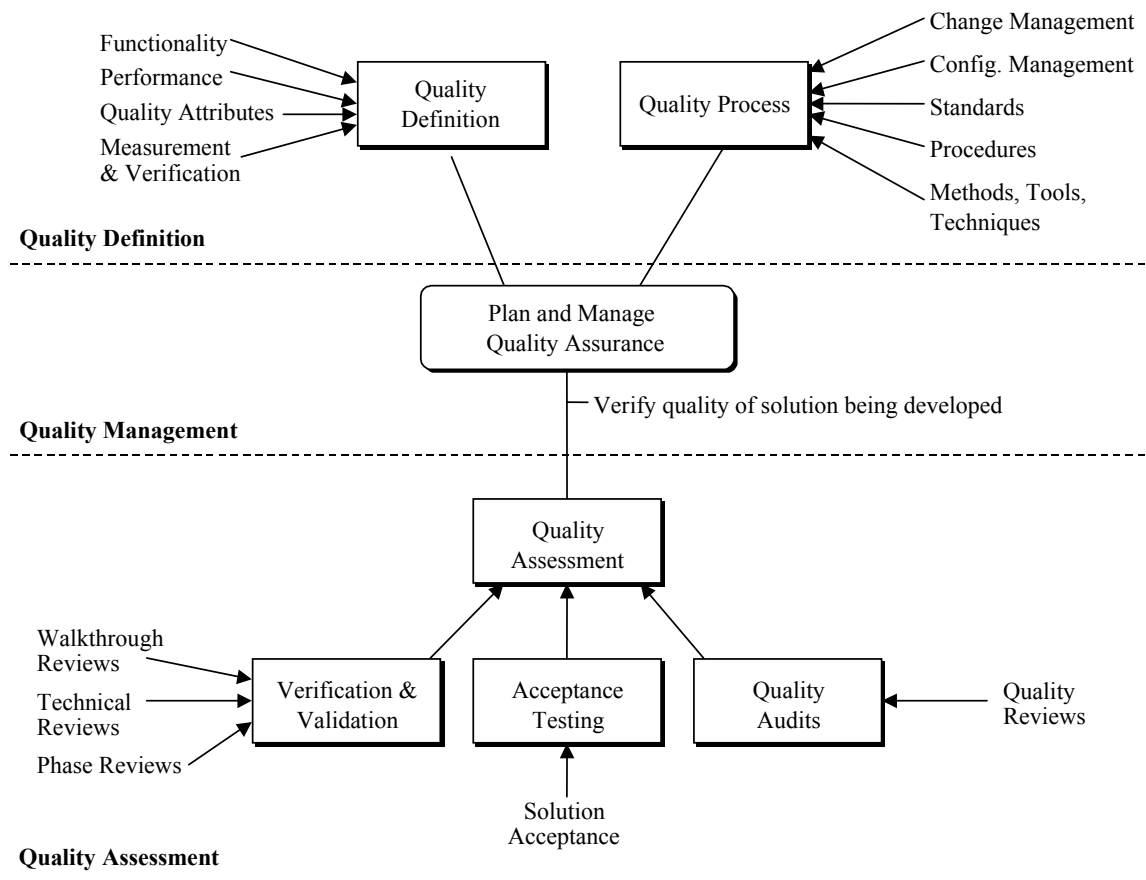
Project Management Planning

Quality Planning

Quality Process

The quality plan identifies the procedures and activities that the project team defines, plans for, and executes for quality. A detailed quality model should be maintained by each state organization, and this model should describe the detailed quality procedures that are used for IT projects. The following model defines a quality assurance process that is consistent with ISO (International Standards Organization) 9000 standards.

Quality Assurance Model



Project Management Planning

Quality Planning

Creating the Quality Plan

The state organization's quality model should be based on standards and procedures that enable the quality manager to ensure quality throughout the life of the project by:

- enforcing quality standards and procedures through formal reviews, walkthroughs, and inspections
- tracking and reviewing defects at each phase of the project
- ensuring all approved project management activities are properly planned and executed.

Most projects will not require a "unique" quality plan, but can be completed under the standard process. For large or complex projects requiring a unique Quality Plan, it defines, tracks, and measures the project's quality goals. The Quality Plan describes how the project implements its quality process and defines the processes that will be taken to prevent and remove defects. It is important for management to consider the quality goals early in the project and ensure that quality activities are integrated into the overall project management plan.

The quality plan identifies the role or roles is responsible for the quality assurance activities, identifies the scheduled quality activities, and identifies the resources required to conduct the activities. Quality activities are included in the project schedule as milestones and quality audits that require budgeting and staffing.

Successful quality processes always strive to see quality through the eyes of the customer. The customer is the ultimate judge of the quality of the product they receive. They will typically judge a project by whether or not their requirements and business objectives are met. To ensure delivery of a quality product, each phase of the project should ensure that requirements are addressed.

It is important to include a process that validates that the currently defined requirements will be satisfactory to the customer. It is counterproductive to develop a system that meets a documented requirement if you and the user know that the requirement has changed. The change management process helps to control the number of such changes, but quality processes must be in place in order to make changes when they are necessary.

Responsibility for Quality

Though the Project Manager has overall responsibility for the quality of the final product, every project member needs to buy-in to the responsibility for doing quality work. Through ownership of the organization's quality policy, the individual team members become the most effective way to implement quality into products efficiently and completely. A quality policy cannot rely on "adding" quality at the end of a process; it must be built into the work of each individual on the team. This is why it is important to see Quality Assurance reviewing as a process. It is far more cost effective to have team members add quality into their day-to-day jobs than to have a quality analyst find a problem after a process has been completed.

Project Management Planning

Quality Planning

Independence of the Quality Assurance Team

The Quality Assurance team assures that the quality plan is executed as planned. This quality team reports functionally to the Project Manager, but must also have a reporting chain outside the project to facilitate problem escalation. Problem escalation is the process of moving a problem to a higher management level if sufficient attention is not given by the project manager. The independent reporting chain provides a check and balance on the project.

Checklist

Quality checklists are often developed as part of the quality procedure definitions. The checklists and associated quality procedures are developed individually by each state organization and by each Quality Assurance audit team.

References

The quality plan overview for the project is included in the Project Management Plan.

Project Management Planning

Requirements Definition

Importance of Project Requirements

Requirements definition in the Planning process is one of the most crucial steps in the process of creating a project. Without well-defined requirements, managers cannot plan a project, developers and integrators do not know what to build, customers do not know what to expect, and there is no way to validate that the system as built satisfies the needs of the organization.

What is a Requirements Process?

The disciplined application of proven methods and tools to describe a proposed system's intended behavior and its associated constraints.

When are Requirements Defined?

System requirements evolve over time. At each stage planning or execution, additional information is derived and documented. At the onset of the initiating phase, for instance, basic business needs are expressed and documented. Over time, these needs are refined and developed into functional user requirements and are later developed into detailed technical specifications.

During project planning, product requirements must be understood in enough detail to develop project budgets and define resources needed to implement the solution.

A project team should never commit to the project activities list, schedule, or budget to build something product requirements are defined.

At project startup, requirements are reviewed to ensure that they are clear and that the development team has a full understanding of the requirements. Areas where additional definition is required are noted and logged as action items.

During the design phase of the System Development Life Cycle, detailed specifications are developed based upon the product functional and technical requirements and the defined scope of the project. These specifications are used to define the specific technical approach and implementation that will be used to fulfill system requirements.

Requirements Specifications

The requirements specifications involve many layers of specification, but starts with a Business Problem Statement within the Project Charter. This is a very high level document that describes the top level needs that the solution must meet. The statements are high level and may be met by a combination of automated and manual processes. For example, a Business Problem might be: "The system must support timely payment of invoices."

A functional specification describes the hardware and software requirements needed to perform defined functions. It is based upon the Business Problem and further defines those business needs into technical requirements. The functional requirements express more specifically how business needs might be met.

Project Management Planning

Requirements Definition

For example: “Invoices must be created weekly based on input received from the order processing system.”

The functional specification defines requirements in terms of inputs, outputs, and behavior of the system. External interfaces are also defined. Non-functional requirements and constraints, such as performance, portability, standards compliance, and reliability are also defined in a functional specification.

Who Defines Requirements?

Requirements definition is a difficult task. People often have difficulty expressing needs without immediately attempting to define the solution. It is also difficult to conceptualize how new automation will affect a task that is currently being done manually or with older technology.

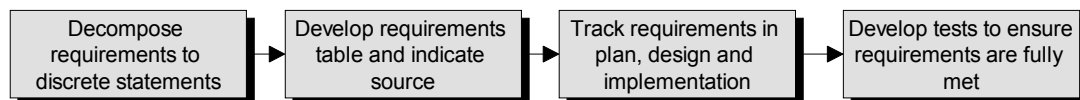
Requirements definition is also a communication intensive process, and, unfortunately, technologists and subject matter experts have different vocabularies, backgrounds, and preferences. This makes the specification process difficult.

To successfully define the requirements of a system, the requirements process includes, and is focused on, the intended users. There are various techniques that can be used to derive the requirements, including interviewing users, observing users conducting their tasks, and holding Joint Application Design (JAD) sessions, where users and analysts interactively explore requirements in a facilitated session.

For more complex systems, prototyping of user screens and reports can help facilitate the communication process. With a prototype, users can see samples of how the system operates, and the developers can provide detailed information that the user group can comprehend.

Requirements Traceability

The requirements process ensures that the requirements defined in the functional specification are carried through the planning, execution, and testing phases. Requirements definition performed during the Planning is always done at a very high level. The traceability process involves the following steps:



Throughout the SDLC, requirements traceability is facilitated by decomposing requirements from a document format to a list or table format. Often requirements that are not decomposed result in some ambiguities, such as:

- Multiple requirements may be embedded in a single sentence.
- Compound conditions to requirements may exist in a single sentence (i.e., and/or conditions).
- Requirements may not be testable or determined as met.
- Requirements may be inconsistent.

Project Management Planning

Requirements Definition

By placing each requirement as an individual statement that can be tracked and accounted for, the project team can ensure that stated needs of the system can be traced. The first traceability can occur when the WBS is completed. Each requirement is reviewed to ensure that there is a task defined for fulfilling that requirement. Allocation of requirements to the WBS helps define the WBS element and indicates the scope of work covered by the item. This definition allows for a more careful estimate of schedule, budget, and resources in the planning phase.

A sample requirements traceability table is shown below:

Project Requirements Project Traceability Table Product Scope Statement

Documents Product Specifications with appropriate cross-references to other documents.

No.	Requirement	RFP Reference	SOW Reference	Task Reference	Specification Reference	Completed	Comments / Clarification
1.	The system shall incorporate a well defined help function	2.2.10 2.4.2	S01230	S01230	SSS 3.2.6.4	Yes	
2.	Function key macros and /or other shortcut techniques shall be provided for "power users"	2.2.10	S01230.1	S01230.1	SSS 3.2.6.4	Yes	
3.	The system shall require each user to sign on to the system with a password	2.2.10 2.4.2	S01230	S01230	SSS 3.2.6.1	Yes	
4.	The average response time to all entries shall be 1/2 second or less.	2.2.10	S01230.1	S01230.1	SSS 3.2.6.1	Yes	Yes
5.	Any data item shall only have to be entered once.	2.2.10 2.4.2	S01240	S01240	SSS 3.2.6.1	Yes	
6.							
7.							
8.							
9.							
10.							

SOW = Statement of Work

Numbering each requirement with a unique identifier further facilitates reference to the requirement for the purposes of contract, engineering, quality assurance, and project management.

Project Management Planning

Requirements Definition

Where appropriate, columns can also be added that assign the requirement to a category for sorting. Also, as the project progresses, there can be references to the test plans and procedures, and a compliance field can be entered to define which requirements have been fulfilled and tested.

This requirements analysis process allows specific requirements to be uniquely identified and serves as a common method between developers, customers, and the project management team. It facilitates general communication, traceability, and provides a method for controlling requirements changes.

Approvals

Requirements documents are approved by the project team, the users, and the Steering Committee. Specifications are reviewed and baselined at the start of the project. Detailed specifications developed within the project execution phase are rebaselined at approval to incorporate changes to the project scope, of course, these changes must be approved by the Steering Committee.

Managing Requirements Changes

A change control process is developed to ensure that the requirements of a project do not change uncontrollably as discussed in *Configuration Management*.

References

The Requirements Traceability Table, i.e. Project Requirements, is included in the Project Plan.

Project Management Planning

Resource Planning

Overview of Resource Planning

Every organization has a limited number of resources to perform tasks. A project manager's primary role is to find a way to successfully execute a project within these resource constraints. Resource planning is comprised of establishing a team that possesses the skills required to perform the work, as well as scheduling the non-labor resources (tools, equipment, and processes) that enable the staff to complete the project.

Determining the Size of the Team

The optimal size of a project team is driven by two principal factors. One is the total number of tasks to be performed, and the other is the effort needed to perform the tasks.

In developing the schedule and assigning the resources, the project manager determines the optimal mix of staff to activities. Doubling resources does not necessarily double productivity. For example, 365 engineers could not complete in a day a project estimated at one person per year. At some point, people begin to get in each other's way. The significance of the project duration, as well as each major activity's duration, needs to be clearly understood and documented as part of the scheduling process.

Adding more people to an activity creates the need for additional communication and may also increase the need for equipment or tools. Large teams require a significant amount of coordination and teamwork. Sometimes a smaller team can accomplish much more than a larger one in a shorter period of time. The optimal selection also depends on the personalities of the team members and the communication and organizational skills of the project manager.

Adequate and timely personnel planning contains cost overruns. Having personnel on-board when they are not essential is extremely costly. It is important for the project manager to understand the size of the required team needed to perform the work on a week by week basis. For this reason, significant effort needs to be made in the planning phase to identify the resources required to complete each task. And then determining when those resources are needed within the Execution process.

Determining Required Skills

Finding available staff with the skills required to perform a task is critical to project success. For example, some assumptions about the skills of the person performing the task are made by the project manager. The skills of the people performing the work is directly related to the time it takes to perform a task.

In the planning process, develop a list of skills required. This skills list is then used to determine the type of personnel required for the project and all the individual tasks.

During Start-up, project manager pragmatically assesses the skills of the available people for the project. The project manager's job is to determine the risks associated with the available skills and to build a plan that realistically accounts for those skills. Unfortunately, skill level is not a yes/no factor. People have varying degrees of skill, and the manager needs to determine the level of schedule adjustment that should be made based upon the staff skill level. Significant issues should quickly be addressed by management.

Project Management Planning

Resource Planning

Where staff with the necessary skills are largely unavailable, the project manager and project sponsor has the option to hire the necessary talent or contract services to perform the work or adjust the schedule accordingly if agreed to in the Management Plan. Typically, these decisions are made early in the planning process.

Identifying Required Non-Labor Assets

All project teams require the tools necessary to successfully perform the tasks assigned. In scheduling resources, the project manager must ensure that both people and necessary equipment are available simultaneously.

The need for adequate work space is often overlooked when planning a project. If a 15-person project team is going to start work, there needs to be a facility to house the staff. Ideally, the team should be placed in contiguous space to facilitate interaction and communication. By having everyone working in close proximity, chances for project success are increased.

In addition to workspace, equipment for the team should be included in the plan. Assuring the availability of equipment at critical points in the project is key in planning a successful project. Also, technical support for equipment and software should be identified at this point. Efficiency and morale are negatively affected by non-availability of equipment information or support needed to perform a task.

Define Resource Profiles

A staffing plan is developed for each project. For small projects, this may be simply stated as the assignment of three people full time to the project throughout its six month duration. For more significant projects, the staffing plan identifies when and how staff is brought onto and taken off the project team.

The chart and the graph on the following page are useful in the Project Plan for staffing projects and are required to be included in the Project Management Plan. Both of these documents are also updated during Execution and are used in Project Status Reports.

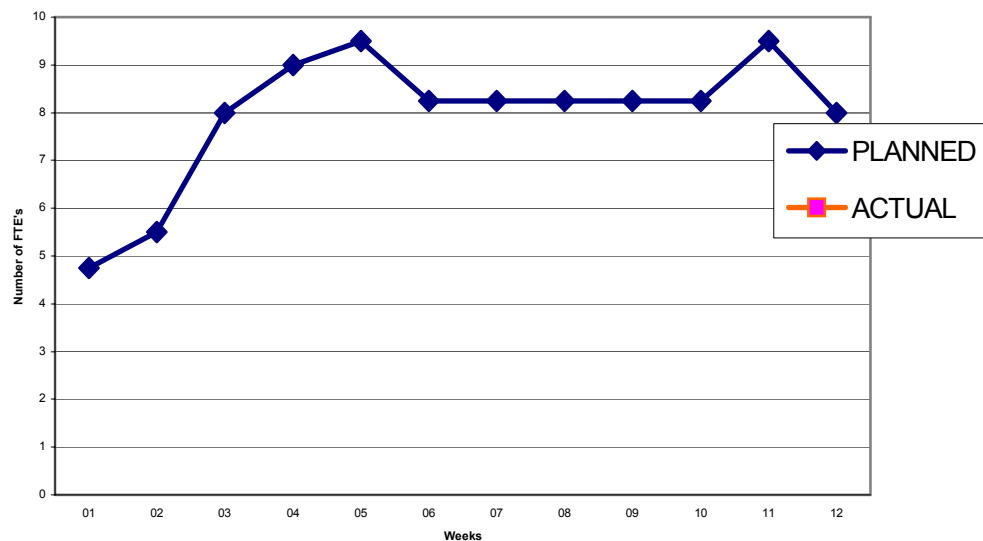
Project Management Planning

Resource Planning

FTE Resource Loading

POSITION	Wk. 1	Wk. 2	Wk. 3	Wk. 4	Wk. 5	Wk. 6	Wk. 7	Wk. 8	Wk. 9	Wk. 10	Wk. 11	Wk. 12
Project Manager	1	1	1	1	1	1	1	1	1	1	1	1
SW Mgr	1	1	1	1	1	1	1	1	1	1	1	1
Sr. SW Eng.	1	1	1	1	1	1	1	1	1	1	1	1
SW Analyst	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	1	1
Programmer			2	2	3	3	3	3	3	3	3	2
Config. Mgr			0.5	1	1	1	1	1	1	1	1	1
Tech Writer	0.5	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Support	0.25	0.5	0.5	1	1	0.25	0.25	0.25	0.25	0.25	1	0.5
Steering Committee	.2		.2		.2		.2		.2		.2	
Sponsor	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
TOTAL												
PLANNED	5.05	5.6	8.3	9.1	9.8	8.35	8.55	8.35	8.55	8.35	9.8	8.1
POSITION	Wk. 1	Wk. 2	Wk. 3	Wk. 4	Wk. 5	Wk. 6	Wk. 7	Wk. 8	Wk. 9	Wk. 10	Wk. 11	Wk. 12
Project Manager												
SW Mgr												
Sr. SW Eng.												
SW Analyst												
Programmer												
Config Mgr												
Tech Writer												
Support												
Steering Committee												
Sponsor												
TOTAL												
ACTUAL												
DIFFERENCE												

Staffing Plan



Project Management Planning

Resource Planning

The previous chart and graph illustrates the planned number of people required by week for a project team. Both of these charts will be used in the Execution Phase to depict how actuals might be applied in the performance of the project.

The graphic representation of the staffing plan helps to point out peaks and valleys in staffing that can present serious project management problems. The project manager realistically determines how a relatively consistent staffing level can be maintained. Particular attention is paid to releasing resources when they are no longer needed on the project. It is unrealistic to assume that the project can go from a 5-person to 10-person level of effort in a month and then return to a 5-person effort in another month. Resource leveling is supported by many project scheduling tools, but requires the special attention of the project manager in both the planning and the execution phases of the project.

Forming the Team

Project organization is used to coordinate the activity of the team and to define the roles and responsibilities of team members. Project organization is needed for every IT project, and a project manager must always be identified and active.

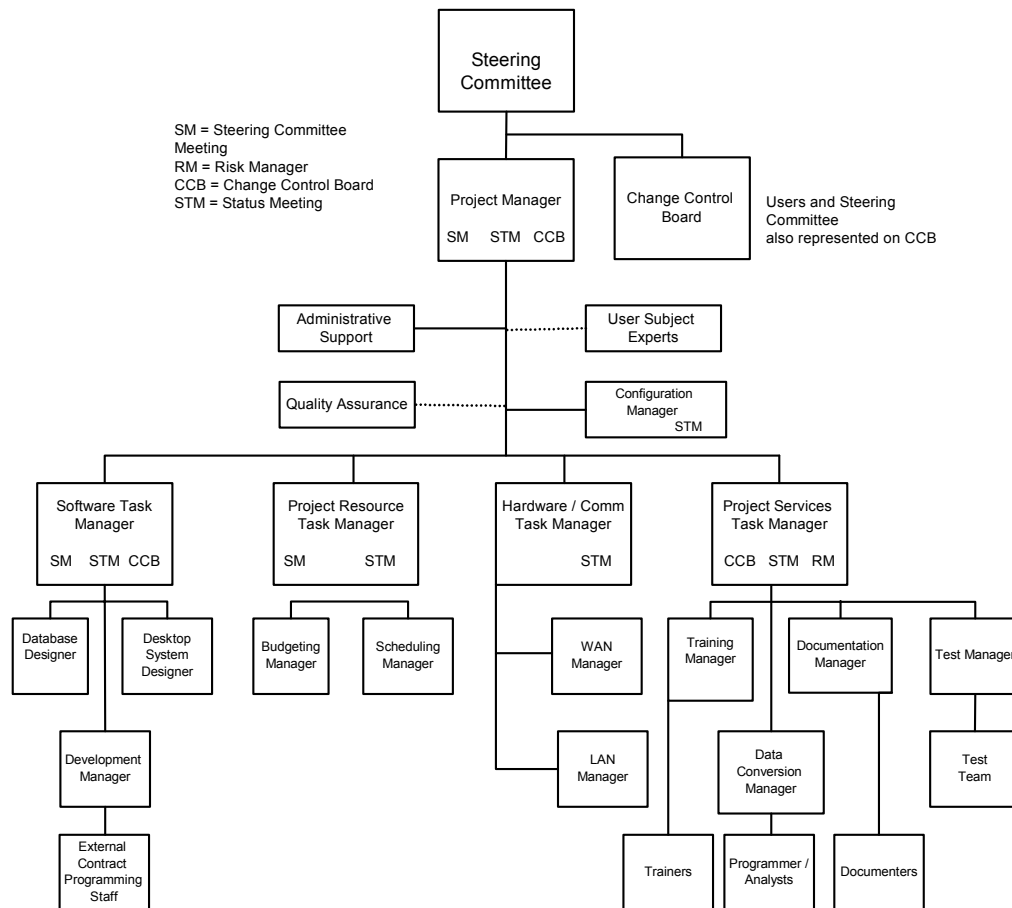
Confusion and lack of productivity are the result of poor project organization. This is where many projects run into trouble. A good organization facilitates communication and clearly defines roles and responsibilities.

There are numerous ways to organize a project, but projects require a unique organizational structure. There are no standard organizational methodologies that every project should use. A sample organization chart for a large project is shown on the following page, with the types of functions that are often assigned to a project. Some projects update the organization chart to indicate those who will be attending the project status meetings, risk meetings, and change control board meetings.

Project Management Planning

Resource Planning

Sample High-Level Organizational Chart For a Large Project



The larger the project, the more critical the organizational structure becomes. In a small project, a single team member may be responsible for several functions, whereas in a large project the functions might require full-time attention. A very large project, for instance, often requires a deputy project manager. A small project might have the senior technical staff member serving as a development manager. Definition of the project organization is a critical part of the planning process.

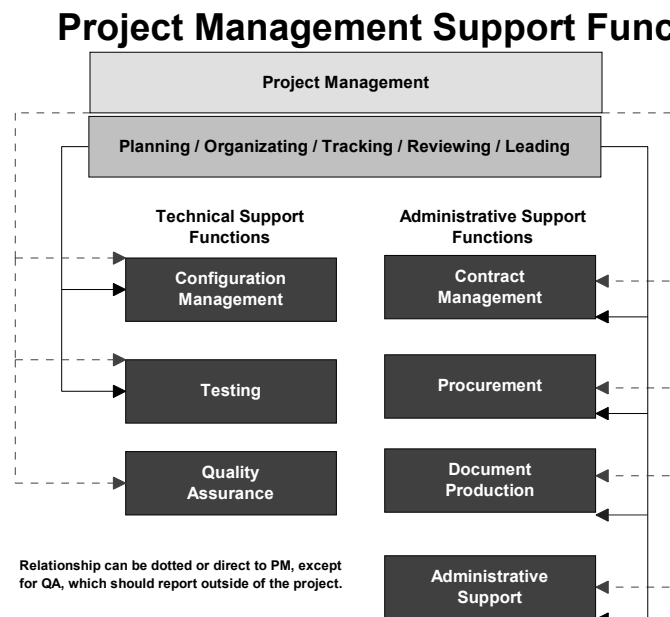
Project complexity also is a major factor when organizing a project. For example, a project that includes a large software development component typically includes a software development manager. This allows for a concentration of resources on a high risk area. Unless a project is extremely small, it is useful to organize the project into functional teams. This approach leads to idea synergy and improved communications. The project manager is responsible for defining and selecting the team leaders. Team leaders can off-load some of the work of the project manager and take responsibility for completion of tasks. Team composition should be determined early in the planning phase.

Project Management Planning

Project Management

Support Functions

While the project manager, in theory, is responsible for all of the management aspects of a project, rarely can all of these tasks be performed by one person. In fact, some should not be performed by the project manager due to the time consuming nature of the function. These necessary support tasks can be divided into administrative and technical support functions and are shown in the following figure.



The administrative functions are fairly obvious and can be further expanded to include scheduling and budgeting in very large projects. Within the technical support functions, configuration management ensures that changes to the product being developed are controlled; quality assurance monitors the process of the product being developed; and testing or quality control verifies compliance of the product being developed to the stated requirements.

It is the project manager's responsibility to organize the project support groups and to document their planned activities.

Define Assumptions

Documenting the assumptions made in resource allocation is critical to the later success of the project. Without clear documentation of these assumptions, later changes in the staffing are difficult and risky.

If, for example, a key person with a specialized technical skill was assumed in the plan, that assumption must be documented. Then, if that resource is unavailable to perform the task, the project manager can recognize the risk and make necessary decisions. Without documentation of the assumption, the plan is open to serious risk without the project manager realizing it.

Project Management Planning

Risk Management Plan

Identify Risks

A risk is any factor that may potentially interfere with successful completion of the project. Risk management recognizes that a problem might occur. When a problem develops, the risk of it happening is 100%. By recognizing potential problems, the project manager can attempt to avoid a problem through proper actions.

Risks are inherently involved with scheduling resources. Sound resource planning makes allowances for dealing with risks in one or more of the following ways:

- The most recommended technique for risk allowance is to add an additional WBS task for risk management/risk reduction, and financial reserves can be set aside to deal with potentially delayed schedules.
- Add time to those tasks where resources are known to be a problem. There is no rule of thumb for this multiplier; it depends on the degree of risk and the overall impact that resource problems can have on the project. The cost for this task would be derived from the Total Risk Hours from the Risk Analysis Worksheet.
- Add a percentage time multiplier to the schedule for specific individuals, particularly if new technology is being used or if the person providing the estimate is extremely optimistic. Remember that technical staff typically underestimates the time required to do any particular task.
- Where skill shortage is identified, add time and resources for training. By recognizing resource shortfalls and providing the necessary training, a project manager mitigates some level of risk.

Risk Management Process

The procedure that the team will use to manage project risks is defined in the planning stage, documented in the project plan, and then executed throughout the life of the project. Risk management deals with the following risk phases:

- Risk identification
- Risk analysis, quantification and prioritization
- Risk mitigation planning
- Risk response

The Risk Management Plan i.e. Risk Management Worksheet, documents the procedures used to manage risk throughout the project. In addition to documenting the results of the risk identification and analysis phases, it must cover who is responsible for managing various areas of risk, how risks will be tracked throughout the life cycle, how contingency plans will be implemented, and how project resources will be allocated to handle risk.

Project risks are identified and carefully managed throughout the life of the project. It is particularly important in the planning stage to document risks and identify reserves that have been applied to the risks.

There are various areas that can affect a project, including:

Project Management Planning

Risk Management Plan

- The technology used on the project
- The environment in which the project is executed
- Relationships between team members
- How well the project fits the culture of the enterprise
- How great a change will result from the project?

Risk identification consists of determining risks that are likely to affect the project and documenting the characteristics of those risks. Don't try to identify all possible risks that might affect the project, but focus on those likely to affect the project's success.

Responsibility for Risk Identification

All members of the project team can identify risk, but the project manager has overall responsibility. The project manager is responsible for tracking risks and for developing contingency plans. Sometimes a risk identification "brainstorming" session can help in the initial identification process. Such meetings help team members understand various perspectives and can help the team members better understand the "big picture."

Risk identification begins in the early planning phase of the project. A Risk Management Worksheet (shown later in this section) is started during the planning phase. Then, as scheduling, budgeting, and resource planning occur, the worksheet is updated to reflect further risks identified in the planning stage.

At project startup, the Risk Management Worksheet is reviewed again, and any new risks are added to it. As the project progresses, members of the team identify new risk areas that are added to the Risk Management Worksheet. Also during the project, risks identified earlier may be removed.

Risks are documented so that contingency measures can be taken to mitigate their effects. Risks to both the internal and external aspects of the project should be tracked. Internal risks are those items the project team can directly control (e.g., staffing), and external risks are those events that happen outside the direct influence of the project team (e.g., legislative action).

Project Management Planning

Risk Management Plan

Risk Management Worksheet Instructions

The risk categories/events shown on the Risk Management Worksheet are provided for guidance, and do not represent an exhaustive list of risks. The risk categories/events should be customized for each individual project.

The project manager, with the support of the project team, then evaluates each risk event for the following:

Loss Hours:

Indicate the expected increase in hours that will occur if the risk event occurs.

Probability:

Use the probability field to quantify the chance of the event taking place. Use a decimal value from 0 to 1 (e.g., .70).

Risk Hours:

This field represents the estimated risk for this event. The field is calculated by multiplying the loss and the probability fields.

Previous Risk Hours:

This field represents the value of risk hours reported in the previous period of the Execution Phase. A difference between this value and the current risk hours indicates a change in the risk status and is used to alert management that a change has occurred.

Preventative Measures and Contingency Measures:

The next two columns document the planned preventative and contingency measures that could minimize the effect of the risk event. The measures shown in the next figure are representative of common contingency measures, but are not an exhaustive list. The project manager should provide specific contingency plans for the specific project.

Responsible Person:

The individual assigned to track, report on or manage this specific risk.

Comments:

The comments column should be used to document items such as a change in value of risk hours from the previous period, management actions needed to contain risk, and status of preventive and contingency plans.

Total:

The sum total of values in column four is the total risk hours for the project and should be reported in the project plan. This total should be multiplied by a blended rate for personnel and included in the WBS, Schedule and/or Project Estimate Summary Worksheet.

Project Management Planning

Risk Management Plan

Contingency Planning

Contingency plans are developed as a result of a risk being identified. Contingency plans are pre-defined action plans that can be implemented if identified risks actually occur. If a problem actually occurs, the contingency plan must be implemented and reserves must be allocated.

As a guideline, contingency plans are developed for the top five risks associated with a project. For large projects the top five risks of each major sub-system may be actively tracked. To properly implement a plan, a reserve is usually required where dollars and/or time are held by a project manager to apply to the execution of a contingency plan. Such contingency reserves are discussed in the appropriate sections of planning. Without maintaining a reserve, the project manager is forced to go back for additional time or dollars for every risk as it becomes a problem. It is far more desirable to maintain a level of reserve where problems can be dealt with from within the original budget and schedule of the project.

There are some situations where nothing can realistically be done to prevent or deal with a risk. In this case, the project must be managed in such a way that the probability of the event occurring is minimized. If the event does occur, the project manager must replan the project and include the effect of the problem.

Project Management Planning

Risk Management Plan

Risk Management Worksheet

A description of all risks identified for the project, the probability of the risk occurring, the impact of the risk on the project, and the suggested mitigation activities.

Last Risk Assessment Date:

Prepared by:

Ref #	Risk Category/ Event	Loss Hours	Probability	Risk Hours	Previous Risk Hours	Preventive Measures	Contingency Measures	Responsible Person	Comments
	Personnel								
1	Lack of knowledge in this hw/sw	200	.10	20		1, 2		Development Manager	
2	Insufficient resources available	400	.25	100		13		Development Manager	
	Equipment								
3	Delivery date slip	100	.25	25			3, 4	Purchasing	
4	Insufficient configuration	100	.15	15		5, 6	3, 4	Technical Architect	
	Customer								
5	Infighting	150	.2	30		7	8	Project Manager	
6	Unacceptable working environment	200	.3	60		9	8	Project Sponsor	
7	Third party involvement	300	.1	30		14, 15		Steering Committee	
8	Customer availability	250	.25	63		7, 16	29	Project Sponsor	
	Logistics								
9	Multiple customer sites	300	.2	60		20, 21, 22			

Project Management Planning

Risk Management Plan

Ref #	Risk Category/ Event	Loss Hours	Probability	Risk Hours	Previous Risk Hours	Preventive Measures	Contingency Measures	Responsible Person	Comments
10	Physical separation of team and customer	200	.2	40		20, 21, 22, 23		Project Sponsor	
	Organization								
11	Team > 10	200	.2	40		24, 25		Project Manager	
12	Customer people on team	300	.3	90		26		Project Sponsor	
	Other								
	TOTAL RISK HOURS			573					

Risk Reserve \$22,920 at \$40 average hourly cost

Project Management Planning

Risk Management Plan

Suggested Preventive and Contingency Measures

1. Provide appropriate training.
2. Hire trained specialists.
3. Install temporary hardware.
4. Utilize internal hardware temporarily.
5. Purchase additional equipment.
6. Implement product functionality in a phased manner.
7. Get agreement on who has decision authority; designate key user responsibility.
8. Locate project team in our offices.
9. Negotiate better environment.
10. Ensure that all the resources are provided.
11. Suggest/sell Functional Specifications before development.
12. Unilaterally develop Functional Specifications.
13. Adjust deadline and get our customer buy-in.
14. Do not commit to third-party performance.
15. Get third party commitment at least equal to (if not more than) our commitment.
16. Get customer commitment to participate in the project.
17. Increase estimates for the related tasks.
18. Do not commit to response time unless absolutely necessary and, then only if a study is done by knowledgeable persons.
19. Establish access to product support personnel.
20. Hold regular meetings with customer.
21. Maintain constant written and oral communication with remote personnel.
22. Visit remote sites as needed.
23. Demonstrate incremental results.
24. Divide staff into teams and assign team leaders.
25. Dedicate our management resources.
26. Establish final authority of our project manager.
27. Use proven hardware for development if possible.
28. Reduce functionality to meet deadline.
29. Document our assumptions and understandings and get Customer's sign-off before investing substantial resources.
30. Design an alternate (contingent) solution strategy.

Project Management Planning

Risk Management Plan

Risk Identification Summary (Top Five Risk)

Category	Prob	Imp	Risk	Mitigation Approaches
MANAGEMENT				
Personnel Availability	High	Med	Personnel developing the system did not participate in the design effort, resulting in less understanding of the system functionality.	Ensure that specifications/overview documents contain sufficient information to allow new personnel to understand system.
Personnel Skills	Low	High	Personnel assigned to project will not have skills to perform work	Since contractor provided quality personnel in design effort, anticipate that skills will be met.
Schedule	Med	High	Completed system (i.e., the system ready for use) not delivered within 18 month timeframe.	Break project into smaller segments to ensure schedule being maintained.
Cost	Med	High	Proposed budget does not reflect all required activities.	Review costing to ensure that all state organization activities reflected.
Change Control	Med	Med	System requirements will change during the development time.	Ensure that a change control process is established that limits changes to those essential to business

Legend

Prob = Probability of Occurrence

Imp = Impact

Project Plan Format

Project Management Planning

Project Plan Format

Project Summary

Following the approvals page, there should be a project summary that defines:

- The project goals, objectives and success factors.
- The estimated value of the project.
- The duration of the effort.
- The purpose of the project.
- Major dependencies/constraints.
- The Project Summary and Project Charter are maintained over the course of the project. It needs to be updated with each new release of the plan.

Page 2 of the Project Summary includes points of contact and prime contractor information.

The following two pages show a completed sample project summary from the template.

Project Management Planning

Project Plan Format

1. Project Summary (Sample)

Information in the project summary areas was started during the project initiating phase and should be included here

Project Name:	<input type="text" value="Document Handling System"/>	Start Date:	<input type="text" value="August 15, 20XX"/>
State Organization:	<input type="text" value="MDA"/>	Submitted By:	<input type="text" value="John Smith"/>
Prime Contractor:	<input type="text" value="Vision Quest"/>	Date Awarded:	<input type="text" value="June 30, 20XX"/>
Current Stage of Project:	<input type="text" value="Development Life Cycle (Design, Development, Integration, Testing or Implementation)"/>		
Project is on Schedule:	Yes: <input checked="" type="checkbox"/> No: <input type="checkbox"/> <input checked="" type="checkbox"/> Details are on page 6	Project is within Budget:	Yes: <input type="checkbox"/> No: <input checked="" type="checkbox"/> Comments: Additional funds were needed to add more hardware for statewide rollout
Please answer the following questions by marking "Yes" or "No" and provide a brief response			
Is this an updated Project Plan? If so, reason for update: <input type="text" value="Included additional activities for statewide rollout"/>		Yes	No
		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Budget for project by fiscal year and is project funded? If so, for what amount(s) and periods(s):			
Budget Amount: 1.2 m	Year: FY 20XX	Funded?	<input checked="" type="checkbox"/>
Budget Amount: .8	Year: FY 20XX	Funded?	<input checked="" type="checkbox"/>
Budget Amount: 2.0 m	Year: 20XX	Funded?	<input type="checkbox"/>
Total Amount:			

Project Management Planning

Project Plan Format

Project Summary - Continued

Points of Contact

This should be the list of individuals that will be involved with the project during the execution phase.

Position	Name / Organization	Phone	E-Mail
Project Manager	John Smith	573-692-0962	smith@state.us
Senior Management Sponsor	Joe Done	573-752-1666	donej@state.us
Senior Technical Sponsor	Mary Lane	573-359-0993	lanem@state.us
Procurement Contract	Tina Black	573-425-1254	blackt@state.us
Customers:			
Unemployment	Bill Nick	573-694-3442	BNick@MDA.us
Audit	Anne Wright	573-358-6996	Awright@MDA.us
Compliance	Lance Gonlin	573-536-8888	Lgonlin@MDA.us
Other Stakeholders (Top 3)			
Same as above			

Prime Contractor Information

Company:

Position	Name	Phone	E-Mail
Project Manager	Betty White	573-664-3229	Bwhite@vquest.com
Senior Management Sponsor	Ned Jack	573-664-3869	Njack@vquest.com
Senior Technical Sponsor	Bob Bowman	573-664-3283	Bbowman@vquest.com

Project Management Planning

Project Plan Format

Project Charter

The project charter follows the project summary information. Like the project summary, the program charter information was developed during the project initiating phase. The project charter is completed in the planning phase. It includes a business problem, statement of work, objectives, success factors, project dependencies, and constraints. A sample of the completed information is shown below.

2. Project Charter (Sample)

Business Problem.

All projects start with a business problem/issue to solve.

The lack of a statewide automated planning system for scheduling transportation road repair maintenance resources has resulted in road closures, duplicated capital expenditures, and increased staff overtime costs.

Statement of Work / Goal / High-level Project Scope Statement

The statement should be short and to the point.

Design and prototype an automated, dynamic planning system by Q4, 20XX, based on an SQL database and GUI front end. Based on the prototype, pilot the system and complete full implementation by Q4,20XX.

Project Objectives / Detailed Project Scope Statement

Provide a brief, concise list of what the project is to accomplish. The project objectives are a detailed version of the statement of work. Taken with the statement of work, the objectives define the boundaries (scope) of the project. The objective statement can also be seen as a decomposition of the statement of work into a set of necessary and sufficient objective statements.

Short-Term

1. Define the planning requirements for the system
2. Define user needs in terms of inputs and outputs
3. Develop the prototype and test
4. Conduct the pilot of system with completion by Q2, 20XX, with the pilot lasting at least three months
5. Complete system acceptance and user documentation
6. Complete system installation at all locations by Q4, 20XX

Long-Term

7. Substantially reduce road maintenance cost over the next several years.

Success Factors:

List factors that will be used to determine the success of the project.

Short-Term

1. Have all locations installed and trained by Q1, 20XX

Long-Term

1. Reduce total maintenance project cost by 3% per year in the 12 months following implementation.
2. Reduce total maintenance project cost by 5% per year in the subsequent following 12 months.

Project Dependencies/Constraints:

The schedule for implementation for such a large, complex system is very constrained.

Project Management Planning

Project Plan Format

Project Trade Off Matrix and Status Summary

Managing a project requires the balancing of three factors: resource, schedule, and scope. These three factors are interrelated, i.e., a change in one of them causes the others to change as well. The project trade off matrix shows the relative importance of each factor:

- constrained means the factor cannot be changed or is severely limited
- accepted means the factor is somewhat flexible
- improved means that the factor is very flexible

Also included on this page of the template is a matrix for project status. The matrix reflects whether the technical, schedule, and cost estimates for each task are behind, on schedule, or ahead of schedule. Comments are added for any deviation from the original estimate. For each project, the unique teams or phase should be filled in the appropriate category.

3. Project Tradeoff Matrix and Status Summary

Schedule	Scope	Resources
CONSTRAINED	ACCEPTED	IMPROVED

Identify variable to be CONSTRAINED, IMPROVED, ACCEPTED

+/- Status

Team/Phase	Technical	Schedule	Cost	Comment
Req.	On	Ahead	On	Completed this phase ahead of schedule, on budget.
Dev Team 1	On	Ahead	On	Completed this phase ahead of schedule, on budget
Dev Team 2	On	On	On	Completed this phase on schedule, on budget
Testing	On	On	On	Cannot be closed until installation is complete
Installation	Behind	Behind	On	Additional pieces of hardware were required to complete statewide rollout causing impact to technical and schedule measures

Project Management Planning

Project Plan Format

Project Organization

The project plan should include a description of the project organization team. A project manager is required for every project. Many plans may also include a narrative of key project member responsibilities. Small projects will require less organizational definition than larger projects, but responsibilities should always be defined.

See *Resources Planning* for a sample Project Organization Chart.

Activity List / Work Breakdown Structure / Schedule

The WBS describes each task required in the project.

Tasks are assigned as work packages which define schedules, identify requirements to be completed and describe specific work to be performed. Refer to *Activity Definition and Sequencing* for further information on development of a work breakdown structure.

It should include milestones, task dependencies, task duration, work product delivery dates, quality milestones (reviews/audits/inspections), configuration management milestones, and action items (with deadlines and responsibilities). See *Activity Definition and Sequencing* for samples of GANTT Charts.

Work Product Identification

The list of project deliverables that includes the date due and the role responsible for the delivery is part of the plan. This information is derived from the project activity list. See the *Activity Definition and Sequencing Section* for a sample of a Work Product Identification Form.

Estimated Cost at Completion

This estimated cost at completion is an assessment of the total project effort in terms of time and dollars. See *Budgeting* within this section for a sample of the Estimated Cost at Completion Worksheet.

Project Management Planning

Project Plan Format

Resource Loading Profiles

The FTE Resource Loading and the Staffing Plan shows the number of personnel, by type, that are required on the project on a weekly or monthly basis. This information is compared on a planned versus actual basis. See *Resource Planning* for a sample Project Staffing Plan.

Requirements

The detailed listing of product requirements should be included in the Project Management Plan. Refer to *Requirements Definition* for a sample.

Risk Management Plan

A Risk Management Plan for the project should be included. A risk is anything that could potentially affect the successful completion of the project. The contractual, management, and technical risks associated are identified and assessed for the probability of the risk occurring, the cost to correct if the risk occurs, the impact of the risk on the project, and the prevention and mitigation activities. Refer to *Risk Identification* section for further information and sample forms.

Project Management Planning

Project Plan Format

Configuration Management Plan

The Configuration Management Plan defines the staff level or the actual person, if known responsible for project configuration management, the procedures used, the planned configuration items and resources required to conduct Configuration Management. This Configuration Management Plan is summarized in a format depicted in the figure below. Refer to the *Configuration Management* section for further information on configuration management planning.

12. Configuration Management Plan

Provide a configuration management plan that defines the person responsible for project configuration management, the procedures that will be used, the planned configuration items, planned release dates for configuration items, and resources required to conduct CM.

CM Responsibility

Manager: J. Smith

Additional Staff for CM:

No additional staff anticipated.

Procedure Reference: MDA CM-01 to CM-03

Configuration Items: Ensure that CM is implemented throughout the project's life cycle.

No.	Item	Comments
1.	System / Management / PPlan	Project Plan
2.	System / Req / Sys Spec	System Specifications
3.	System / Test / TPlan	Test Plan
4.	System / Management / TPlan	Implementation

Ensure that project has a repository for storing configuration items and associated CM records. Briefly describe.

Project Management Planning

Project Plan Format

Quality Plan

The Quality Plan defines the person responsible for project quality, the planned quality activities, and resources required to conduct QA activities is summarized in the project plan. Refer to the *Quality Plan Development* section for further information on quality planning. The QA Plan is summarized in a format illustrated in the figure below.

13. Quality Plan

Provide a quality plan that defines the person responsible for project quality assurance, the procedures that will be used and resources required to conduct quality assurance.

QA Responsibility Manager: M. Anderson Additional Staff for QA: Support needed by lead design and development members		
Procedure Reference: MDA QA01 to QA -10		
Planned Quality Event: Ensure that QA is implemented throughout the project's life cycle. Dates include QA audits, reviews and other project activities that QA staff will participate in.		
No	Item	Comment
1.	Requirement Review	Due 10/1/XX
2.	Code Walk	11/1/XX
3.	User Interface Prototype	11/15/XX
4.	Testing Audit	12/13/XX
Ensure that project has a repository for storing configuration items and associated QA records. Briefly describe. QA records are stored w/project CM material		
Ensure that QA audits the baselines and CM activities on a regular basis. Briefly describe Defined in project schedule		

Project Management Planning

Project Plan Format

Top Five Issues

This form identifies the Top Five Issues that have been identified for this project. It defines the person responsible for resolving the issue, and an associated open and close date, with proposed or recommended solutions.

14. Top Five Issues

Issue Description	Responsible Individual	Open Date	Closure Date	Status
Change order pending for AP processing	A. Smith	4/5/XX	5/1/XX	Estimated release date 4/15/XX
Enhancement number 1 inactive; requirements still not defined	D. Hall	4/1/XX	5/1/XX	Awaiting input from Jim who needs to meet with Bob on 3/15/XX
Out of scope item on month end processing must be decided	A. Smith	2/15/XX	3/1/XX	Determined effort was out of scope. No action to be taken.
Configuration Item Status Reporting system not yet installed.	B. Jones	1/15/XX	1/25/XX	System installed and operational. Baselines entered into CM.

Issue Item Status

The plan should include a list of issues that are maintained by the Configuration Manager. A sample table is shown here.

15. Issue Status

Maintain a list of action items, including a description of the item, a point of contact a date by which action should be taken and a description of the action taken to close items.

Issue Item #	Issue Description	Responsible Individual	Open Date	Closure Date	Status
0001	Document Flow for hardware acquisition	R. Smith	8/1/XX		Developing Flow
0002	Check status of subcontract agreement	B. Hill	8/2/XX	8/4/XX	Signed and Executed
0003	Organize team meeting to review support requirements	M. Jones	8/1/XX	8/2/XX	Meeting scheduled for 8/12/XX
0004	Contact W. Smith regarding coordination of delivery	B. Hill	8/3/XX		
0005	PMP updates Past Due	C. White	8/4/XX		Required by 8/1/XX
0006					
0007					

Project Management Planning

Project Plan Format

Action Item Status

A similar chart as the one above can be used to show Action Items that need to be tracked at the beginning and throughout the project. Action item are important items but too short to be included as a Work Assignment.

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